

MICROSAFE O₂

ADVANCED EQUIPMENT FOR DOSING
OXYGEN IN WINES AND MUSTS



BENEFITS

DOSING O₂
USING ABSOLUTE
VALUE

AUTOMATIC CONTROL
THROUGH A
MICROPROCESSOR

DIFFERENT OXYGEN
DOSING METHODS:
MICRO, MACRO
AND SINGLE DOSE

CONTROL
OF WINE
TEMPERATURE

ADJUVANT DOSING
SYSTEM MANAGED
DIRECTLY BY THE
MICRO-OXYGENATOR

NO NEED FOR SPECIAL
CALCULATIONS OR
ERROR COMPENSATION
TABLES



MICRO-OXYGENATION AND MACRO-OXYGENATION OF WINE

Wine, from an oxidation-reduction point of view, is an unstable beverage susceptible to reduction, which hides the full richness of its varietal aromas and often releases unpleasant odours. This phenomenon is due to the proanthocyanidinic tannins of grapes, which have the property of binding together, subtracting oxygen from other compounds present in the wine, in particular the aromas, which are therefore reduced.

In order to counter this phenomenon, wines must be micro-oxygenated, which means supplied with a precise and constant quantity of oxygen correlated to the proanthocyanidins content of the wine. This technique enables the **stabilisation of colour and reduces the harshness of the tannins**, thus softening them. Moreover, studies on the evolution of barrel-aged wine showed how ellagic tannins and micro oxygenation allows perfect development during the maturation process, preventing the oxygen from damaging the wine. In light of these observations, AEB has developed **Microsafe O₂**.



RANGE

MICROSAFE O₂ IS AVAILABLE IN 3 DIFFERENT MODELS:

MODELLO	
MICROSAFE O₂ SINGLE UNIT	A single dosing unit to CONTROL A SINGLE TANK , featuring entirely digital settings: it allows easy, simple and safe selection of the oxygen dose to be added. It comes with all the alarm systems (e.g. temperature, clogged cartridge, etc.) included in the advanced Microsafe range.
MICROSAFE O₂ 5X5	This equipment allows to manage UP TO 5 TANKS , with just one system. Compact and easy to mount, it allows rapid connection of the diffusers and the feed system. All of the alarms and control systems are included and indicate, on the displays located below, the progress of the micro-oxygenation processes of all the active tanks
MICROSAFE O₂ 15X15	The most advanced MICRO-OXYGENATION SYSTEM , allowing to control up to 15 tanks. It manages all the oxygen dosing, but also allows control over temperature (refrigeration systems), fermentation kinetics, pumping over or punching down and sprinkler.

BENEFITS

1 DOSING OF O₂ IN ABSOLUTE VALUE

With Microsafe O₂ **oxygen is dosed using mass (mg/L) and not volume (mL/L). Using mg/L** is the only way to precisely dose the O₂ in wine. This because gases are compressed, and the quantity of oxygen contained in a certain volume depends on the pressure and temperature.

Example:

If we dose 2 mL of oxygen at a constant temperature of 20°C, at 1.0 bar, we released 2.6 mg, with a ratio mL/mg equal to 1.33. If the pressure is raised to 2 bar, the oxygen dose in 2 ml is equal to 5.32 mg, almost double.

This data is obtained by simply applying the gas equation:

$$pV = nRT$$

from which the following is derived:

$$n = pV/RT$$

n = mass of gas

T = absolute temperature

p = pressure of gas

R = constant of gases (=0.08205)

V = volume

In order to precisely dose the oxygen masse in the wine, and therefore in mg/L, the effective quantity of gas released must be known.

 BENEFITS

2 AUTOMATIC CONTROL THROUGH A MICROPROCESSOR

Microsafe O₂ allows the exact dosing of oxygen into wine thanks to a gas expansion chamber which measure constantly internal temperature and pressure using two dedicated sensors positioned inside:

- Counter-pressure caused by a possible obstruction of the microporous cartridge
- Counter-pressure generated by the wine inside the tank
- Variations in the atmospheric pressure
- Variations in the feed pressure

These variables are monitored through an automatic control and diagnostic system regulated by a specially engineered microprocessor.

The dosing unit continuously measures the quantity of oxygen and monitors the ratio between the gas introduced and expelled from the chamber during dosing.

3 OXYGEN DOSING METHODS

Microsafe O₂ can dose in:

- **Micro-oxygenation** (milligrams/liter/month)
- **Macro-oxygenation** (milligrams/ liter/day)
- **Single dose** within a certain time

These functions are easy to select using a dedicated button located on the control panel and scrolling down menu.

4 CONTROL OF WINE TEMPERATURE

Numerous studies have shown that the ideal conditions for micro-oxygenation are satisfied at temperatures between 14° and 24°C. For this reason, Microsafe O₂ is equipped with a system for continuous control of the wine temperature. The micro-oxygenation process is suspended when the temperature exceeds 22°C or drops below 14°C.

 BENEFITS

5 ADJUVANT DOSING SYSTEM MANAGED DIRECTLY BY THE MICRO-OXYGENATOR

Microsafe O₂ can be equipped with a remote tannin dosing system, which can be managed through the control panel. By scrolling the menu, a special window appears where it is possible to set the quantity of adjuvant to dose: in the case of micro-oxygenation, dosing will occur over the course of a month, whereas in the case of macro-oxygenation, it will take place within a day.

6 NO NEED FOR SPECIAL CALCULATIONS OR ERROR COMPENSATION TABLES

The two microprocessors inside the equipment are dedicated to the dosing system and machine management respectively. Microsafe O₂ therefore doesn't require any manual calculations or compensation tables to carry out dosing.

ACCESSORIES PROVIDED FOR THE USE OF THE EQUIPMENT

DOSING SYSTEMS

Microsafe O₂ is supplied with the following types of diffusers:



LARGE STAINLESS STEEL DIFFUSER

For dosing in tanks up to a maximum of 3000 hL in macro mode and with unlimited capacity in micro mode.



SMALL STAINLESS STEEL DIFFUSER

For dosing in tanks up to a maximum of 500 hL in macro mode and 3000 hL in micro mode.



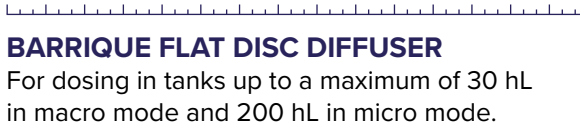
CERAMIC CYLINDRICAL DIFFUSER

For dosing in tanks up to a maximum of 500 hL in macro mode and 3000 hL in micro mode.



CERAMIC FLAT DISC DIFFUSER

For dosing in tanks up to a maximum of 100 hL in macro mode and 500 hL in micro mode.



BARRIQUE FLAT DISC DIFFUSER

For dosing in tanks up to a maximum of 30 hL in macro mode and 200 hL in micro mode.

AVAILABLE DIFFUSERS*

DIFFUSERS NEED DIFFERENT MINIMUM WINE HEIGHTS:

- Stainless steel diffusers 180 cm
- Ceramic diffusers 140 cm
- Ceramic flat disc and barrique flat disc diffusers 60 cm

CHARACTERISTIC	STEEL	CERAMIC
Porosity	Approx. 5 micron	Approx. 0.5 micron
Resistance	High	Sensitive
Cleanliness	Easy	Average difficulty

* **Not included**

OXYGEN INTRODUCTION SYSTEMS

EXTRACTABLE INJECTION BAR

Two systems for oxygen introduction:

FIXED BAR

Introduction of oxygen from below using a 1 meter bar with Garolla 50 fitting to be inserted when the tank is empty.



BAR WITH CUP

Introduction of oxygen using a 1 meter bar, with cup, equipped with a sensor that detects the temperature of the wine with the entry of the tannin. This system, unlike the previous one, can also be used in full tanks.

OPERATING PRINCIPLE

The bar must be assembled by inserting the closure first, then an O-ring, the Teflon shim, the second O-ring, and then the cup with Garolla 50 fitting, screwing it onto the closure.